

**Method and System for Providing Synchronous Communication  
and Person Awareness In a Place**

**Background of the Invention**

Cross References to Related Applications

5           The following U. S. patent applications, filed  
concurrently herewith, are assigned to the same assignee  
hereof and contain subject matter related to the subject  
matter of the present application.

Assignee docket LOT9 2000 0021 US1, U.S. patent application  
Serial No. 08/\_\_\_\_\_, entitled "Method and System for  
10       Creating a Theme of a Place to be Used as a Template for  
Other Places";

Assignee docket LOT9 2000 0022 US1, U.S. patent application  
Serial No. 08/\_\_\_\_\_, entitled "Method and System for  
15       Automatically Accessing, Processing, and Managing the Data  
In a Place";

Assignee docket LOT9 2000 0023 US1, U.S. patent application  
Serial No. 08/\_\_\_\_\_, entitled "Method and System for  
Importing HTML Forms";



Allowing In Place Editing of Office Documents In a Place".

The present application is also an improvement upon the following copending, previously filed applications, assigned to the same assignee:

5      Serial Number 09/\_\_\_\_\_, entitled "System and Method for  
Interconnecting Secure Rooms", assignee docket L0999044;

Serial Number 09/\_\_\_\_\_, entitled "System and Method for  
Dynamic Management of Web Site", assignee docket L0999045;

Serial Number 09/\_\_\_\_\_, entitled "System and Method for  
Presentation of Room Navigation", assignee docket L0999046;

Serial Number 09/\_\_\_\_\_, entitled "System and Method for Independent Room Security Management", assignee docket LO99047;

Serial Number 09/\_\_\_\_\_, entitled "System and Method for Dynamically Generating Viewable Graphics", assignee docket L0999048;

Serial Number 09/\_\_\_\_\_, entitled "System and Method for  
Dynamic Browser Management of Web Site", assignee docket

項目	単位	数値	単位	数値
総人口	人	1,234,567	総人口	人
男性人口	人	612,345	女性人口	人
女性人口	人	622,222	出生人口	人
出生人口	人	12,345	死亡人口	人
死亡人口	人	8,765	自然増減	人
自然増減	人	3,580	人口密度	人/平方キロメートル
人口密度	人/平方キロメートル	123.45	労働人口	人
労働人口	人	567,890	失業率	%
失業率	%	5.67	平均年齢	歳
平均年齢	歳	34.56	識字率	%
識字率	%	98.76	医師数	人
医師数	人	123	看護師数	人
看護師数	人	456	警察官数	人
警察官数	人	789	消防員数	人
消防員数	人	101	議員数	人
議員数	人	234	議員数	人
議員数	人	567	議員数	人
議員数	人	890	議員数	人
議員数	人	123	議員数	人
議員数	人	456	議員数	人
議員数	人	789	議員数	人
議員数	人	101	議員数	人
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議員数	人	456	議員数	人
議員数	人	789	議員数	人
議員数	人	101	議員数	人
議員数	人	234	議員数	人
議員数	人	567	議員数	

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Serial Number 09/\_\_\_\_\_, entitled "System and Method for Browser Definition of Workflow Documents", assignee docket L0999055.

LOT9 2000 0028 US1

## Technical Field of the Invention

5 This invention relates to web technology. More particularly, it relates to the creation and use of collaboration sites on the Internet or on an Intranet client/server system and to the graphical user interface used in Internet communications.

## Background Art

10 The Internet and the World Wide Web (WWW) provide intra-enterprise connectivity, inter-enterprise connectivity and application hosting on a larger scale than ever before. By exploiting the broadly available and deployed standards of the Internet and the WWW, system users and designers can leverage a single architecture to build client/server applications for internal use that can reach outside to  
15 customers, business partners and suppliers.

20 Collaboration requires simultaneous communication between individuals on a project team. Typically, this has required that the team members work in the same location. Phone and video conferencing has enabled some remote work on the part of team members. Also, because of the growth of the Internet, collaboration using web technologies has been

attempted, primarily using electronic mail (E-mail),  
Internet chat rooms, electronic whiteboards, and  
conferencing software. The most useful has been E-mail, but  
this approach results in a large trail or thread of notes as  
collaboration on a project advances, and these notes have no  
home or place to reside which is accessible by all team  
members substantially instantaneously and simultaneously.  
People often enter such a thread at different points, and  
such threads are not efficient in coordinating the work of  
many different people on a team which may include in-house  
developers and others, such as remote contractors, outside  
of an enterprise's firewall.

In order for such disperse teams to have the same, or  
substantially the same, collaboration environment as  
individuals working in the same physical office, a system is  
required which facilitates instant messaging, voice  
conferencing, electronic white boarding, and text and non-  
text file exchange. Such a system needs to provide a  
collaborative electronic room, or space, which is easily  
configured for use by team members without substantial  
administrative or application development support, and  
preferably include both groupware and project oriented  
applications such as shared folders, file exchange,  
workflow, group calendars, threaded conversations, version

control, file locking, file merging, and security.

There is a need in the art for such a system which is easy to set up and which enables diverse and remote teams to become immediately productive in a secure environment. It would be, further, most desirable to allow such a collaborative environment to be set up without administrative support, that is by members of the team itself, using a familiar and easy to use browser user interface. Members of the team, acting with manager or author authority, and using such a browser interface without involving administrative or application development support, need to be able to set up a folder or room for each project element, such as a source code component, with version control, workflow elements, and group calendaring for tracking the project or project element with respect to approvals and deadlines. Such a room needs to receive from team members reports and have them routed to appropriate team members for review, resolution, and approval.

The WWW is a collection of servers on an IP (Internet Protocol) network, such as the Internet, an Intranet or an Extranet, that utilize the Hypertext Transfer Protocol (HTTP). Hereinafter, "Internet" will be used to refer to any IP network.

HTTP is a known application protocol that provides users with access to files, which can be in different formats, such as text, graphics, images, sound, and video, using a standard page description language known as

5 Hypertext Markup Language (HTML). Among a number of basic document formatting functions, HTML allows software developers to specify graphical pointers on displayed web pages, commonly referred to as "hyperlinks," that point to other web pages resident on remote servers. Hyperlinks

10 commonly are displayed as highlighted text or other graphical image on the web page. Selection of a hyperlink with a pointing device, such as a computer mouse, causes the local computer to download the HTML associated with the web page from a remote server. The browser then renders the

15 HTML into the displayed web page.

Web pages accessed over the Internet, whether by a hyperlink, opening directly via an "open" button in the browser, or some other means, are commonly downloaded into the volatile cache of a local computer system. In a

20 computer system, for example, the volatile cache is a high-speed buffer that temporarily stores web pages from accessed remote web sites. The volatile cache thus enables a user to quickly review web pages that were already downloaded, thereby eliminating the need to repeat the relatively slow



process of traversing the Internet to access previously viewed web pages. This is called local caching.

5 It is an object of the invention to provide a collaboration space application model for creating web applications that are aesthetically pleasing and present the user with a simple interface.

It is a further object of the invention to provide for creating web applications that are instantly created, instantly archived, team and project oriented, easy to use, created, accessed and administered via the Web, reusable, and extensible.

It is a further object of the invention to provide a method and system for conducting synchronous communications between members of collaboration space.

## Summary of the Invention

In accordance with the invention, there is provided a method and system for conducting communications within collaboration space by organizing the collaboration space to include a place; the place being implemented as a directory; and establishing synchronous communications as a chat session between two or more parties visiting the place.

In accordance with an aspect of the invention, there is provided a computer program product or computer program element for conducting communications within collaboration space by organizing said collaboration space to include a place; said place being implemented as a directory; and establishing synchronous communications as a chat session between two or more parties visiting said place.

Other features and advantages of this invention will become apparent from the following detailed description of the presently preferred embodiment of the invention, taken in conjunction with the accompanying drawings.

## Brief Description of the Drawings

Figure 1 is a schematic representation of a typical server/client system implementing the collaboration space of the preferred embodiments of the invention.

5        Figure 2 is a schematic representation of various server and client components implementing the collaboration space of the preferred embodiments of the invention.

10        Figure 3 is a schematic map illustrating Domino objects relating to the object model of the collaboration space of the preferred embodiments of the invention.

15        Figure 4 is a schematic map of the object model implementing the collaboration space of the preferred embodiments of the invention.

20        Figure 5 illustrates the components of a collaboration space user interface.

25        Figure 6 is a flow chart representation of generation of collaboration space data objects.

Figure 7 illustrates a typical collaboration space user interface.

Figure 8 is a schematic representation of a directory structure, along with the files in an exemplary collaboration space server.

Figures 9-10 are schematic representations of a user interface illustrating quick browse.

Figure 11 is a flow chart representation of quick browse and what's new.

Figures 12-13 are schematic representations of user interfaces implementing chat.

Figure 14 is a flow chart illustrating quick-browse implemented as a remote control user interface mechanism.

## Best Mode for Carrying Out the Invention

### *Architecture Overview*

Referring to Figure 1, a broad overview of a system implementing the collaboration space technology of an exemplary embodiment of the system of the invention is presented.

Server 100 includes a Domino server 104, HTTP server 106, QuickPlace extensions 108, and open storage 130. Client 102 includes a QuickPlace user interface 110 and browser 112.

QuickPlace open storage 130 includes all the databases and templates that implement the collaboration space. Domino 132 and active directory 134 define the collaboration process. The user interfaces with the system through browser 112. .NSF agents 114, 116, Java 118 and LotusScript 120 represent components and templates downloaded from server 100 in support of collaboration space at client 102. All the extensions 108 are keyed off the URL, as will be further explained hereafter.

Notes API 136, Notes designer 138 and client 140,  
external applications 142, including Java agents 144 and  
LotusScript 146, are located off of open storage 130. Open  
storage 130 is storage where a document can be communicated,  
5 such that external applications 142 may manipulate it.  
QuickPlaces, pages, folders, can be created and changed, and  
data 148 can be imported and exported, using agents in Java  
144 or LotusScript 146.

QuickPlace is primarily concerned with representing the  
collaboration space. Consequently, designers and  
consultants are able to integrate into that space custom  
features and data from other applications. HTML forms 122,  
written using an HTML editor 124, skins 248 (HTML 244 and QP  
tags), external files written using Java 118, and MS office  
documents 250 from MS office 228, may be imported to server  
100 by dragging and dropping 111 from local storage 502 into  
an upload control panel 240 in browser 112.

An alternate client 126 and encapsulated place types  
128 may be provided from which other spaces 129 can be  
20 created that take advantage of the QuickPlace storage model,  
providing functionality which can be manipulated using  
browser 112, including the integration of external  
technology providing opportunity for deep customization.

## *Server/Client Components*

Referring to Figure 2, in accordance with an exemplary embodiment of the invention, several components comprise QuickPlace server 100 and client 102.

5 QuickPlace is built on top of the Domino server 104. In the case of a stand alone installation, a subset of the Domino server is installed. Server 100 also includes HTTP server 106, or the optional MS IIS server 150. QuickPlace extension 108 is where we built most of the collaboration space implementing code exists the server 100. Server 100 also includes a spell checker 152 and a text to GIF converter (Limerick).

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Client 102 includes rich text edit control 162, and applet 164 with which to apply various attributes and is a key component of the QuickPlace experience. Upload control 166 is used to attach and upload files, such as bringing in an agent and uploading it to a place. This is also used to bring in an imported HTML form or a different skin. Upload control is implemented to allow ease of use via drag and drop. Java script 118 includes code downloaded to the client to complete the generation of HTML pages.

[illegible]

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Folders 176 add more complexity to the model, but bring a lot of benefit as well. Pages 182 are organized within folders. Two further objects are primarily visible to the designer of the place. And these are forms 178 and fields 180.

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represents the foundation for building true collaborative applications. Everything created in building collaboration space is done in a place 172. Once such a place is created, it can be made a template 266 and copied as a place type 196. Once it becomes a place type 196, it is available for use by others for building additional places 172 that include the format, look and feel, and other characteristics of the original place.

Room type 198 is an object provided for creating rooms 174 which are of a given type.

The last two objects illustrated in Figure 3 are skins 200 and PlaceBots 184. Skins 200 control everything about the user interface, including layout and style. Layout defines the positioning of components on the screen. A skin provides the layout, and look and feel of a QuickPlace. Layout refers to the positioning of components on a page, and which to include. Referring to Figure 5, the components of a page 340 include logo 342, table of contents (TOC) 346, actions 344, tools 348 and page content 350. Style defines the form and colors of those components. A PlaceBot 184 is an enhanced agent, enhanced in the sense that it enables the use of Java or Lotus Notes or equivalent text editors. Once written using such an editor, and uploaded to a place 172,

the server compiles the PlaceBot into an agent, reporting any errors. The agent resulting from a compiled PlaceBot can be scheduled to run at certain times, or upon opening a form. That is, the PlaceBot may be associated with a form, such as a sales order which, when opened, will cause the agent to execute. Thus, PlaceBots 184 are an essential part of building collaboration applications, for they are the primary repository for custom logic.

Referring further to Figure 3, a preferred implementation of the object model heretofore described uses Lotus Notes/Domino concepts and objects. Thus, Notes/Domino file system directory 202 represents place 172; database 204 represents room 174; folder view 206 represents folder 176; pages 182, members 190, forms 178, fields 180 and skins 200 are represented by notes 208, 210, 212, 214, 220, respectively.

Place 172 is represented as a file system directory. So whenever a place called Acme is created, a file system directory 202 called Acme will be instantiated. Within that directory 202, there are a number of objects. Each room 174 is a Notes database 204. Folders 176 are implemented as Notes folders or views 206 depending on what's more convenient for the particular folder.

Pages 182 are a combination of data notes, forms and sub-forms 208. A member 190 is a data note 190 in a context room 174. Forms 178 and fields 180 are data notes. Place type 196 is a directory\* 216 that contains all the rooms 174 that make up that place type. A room type 198 is a template 218. Skins 200 are a note 220 and PlaceBot 184 is an agent 222.

### ***Notes/Domino Implementation of the Object Model***

Developers familiar with the Domino Object Model (Domino OM) will be able to leverage their existing skills when developing on the QuickPlace platform. "PlaceBots" for example are actually implement Domino Agents, and it is possible to create and test them on Domino Databases. Within the QuickPlace object model (OM), however, there are some divergences from the Domino OM. For example, QuickPlace forms 178 are not the same as Domino Forms. QuickPlace forms more closely resemble Domino Documents, because they are created using a Domino form, and contain a Domino text field with a value of "h\_Form". The value of "h\_form" tells QuickPlace that this Domino document should be rendered in a browser as a QuickPlace form 178.

This structure provides flexibility for Web applications with less complexity than if Domino Forms were used. For example, in a default QuickPlace, a user can create a new QuickPlace form 178. The user chooses which fields to include in form 178, in what order they should appear and what text and or graphics should appear near them. To create this sort of instant structure on the Web using Domino Forms would be very complex indeed. QuickPlace has extended this concept of being able to use HTML to define forms 178 by enabling the creation of custom QuickPlace forms using imported HTML 122. These Forms not only make use of Web authoring technologies such as JavaScript, but also have the back end support of Domino. This back end logic is implemented via tools such as PlaceBots (Domino Agents) 184. This means that forms 178 have the ability to not only to define the look and feel of visible parts of an application, they also have the potential to initiate workflow and many other powerful automated features.

QuickPlace forms 178 have been optimized by stripping away many of the Notes features not required when used on the Web. A another advantage of this structure is that it enables the use of Web authoring tools to extend the objects. For example, with respect to QuickPlace forms, it

is possible to modify forms using XML, JavaScript and HTML and any other Web tools. Knowledge of JavaScript and HTML are more common than Domino Designer skills, thus making the QuickPlace a very open platform. Some parts of the QuickPlace OM implement Domino/Notes functionality in different ways to a standard Domino application. For example, QuickPlace uses Domino's security and authentication model as a basis for its management of access to QuickPlaces. However, instead of primarily utilizing the Domino Directory, QuickPlace also uses a Contacts1.nsf database for each QuickPlace.

### ***Containment and Association of Objects***

Referring to Figure 4, this object model is further described. Figure 4 illustrates selected QuickPlace objects, the directory structure and how Objects relate to each other within the hierarchy. This model provides a visual representation of the containment and association between objects.

### ***QuickPlace Server***

The highest level of the model is the QuickPlace Server

170. Within server 170 are all of the QuickPlaces 172 as well as the resources they access to finally render Web applications.

5 This Figure 4 displays the Model focusing on QuickPlaces. The following explanation, written from a programmers perspective, describes each of the objects of the model and they can be accessed in an application.

QuickPlace uses notes for many of its objects 182, 190, 178, 180 and 200, so that objects in the Place can be organized more easily. Table 1 sets forth the QP objects and their Notes/Domino equivalents. As an example of how design Notes are implemented consider the Table Of Contents (TOC). The Table Of Contents is a list of pages, folders and tools such as the Customize Area. Domino Folders may be listed using a link document, or Note.

TABLE 1: QUICKPLACE OBJECTS AND DOMINO EQUIVALENT

<u>QuickPlace Object</u>	<u>Domino Equivalent</u>
QuickPlace Server	File Directory
Place	File Directory
Page	Data Note, Form & Subform
PlaceBot	Domino Agent
Theme	Data Note
Member	Data Note in Contacts1.nsf
Subroom *	NSF Database
SubroomTheme	Data Note
SubroomMember	Data Note in Contacts1.nsf
Room	NSF Database
Folder / TOC	Folder or View
Form	Data Note
Field	Data Note

\* Subrooms contain their own set of Folder, Page, Form, Field, PlaceBot & Subroom Objects

QuickPlace Server 170 is a file directory containing all Places and Resources. The Domino equivalent is a file directory 202 named "quickplace". This identifies the main folder 176 for a QuickPlace server 170. If the QPServer 170 is running as a stand alone, this folder will be in the QuickPlace data folder. For example

D:\QuickPlace\Data\quickplace.

If the QPServer 170 is running on top of a Domino server the folder will be the Domino Data folder. For example

D:\Lotus\Domino\Data\quickplace.

To locate QuickPlace Server 170 in PlaceBots and get access to all of its databases, a LotusScript method GetDbServer is executed together with a test that the Path to databases starts with "QuickPlace".

### *Place Object*

Place object 172 is a directory in the "QuickPlace" directory grouping resources for a Place. The Domino equivalent is a file directory bearing the name of the QuickPlace. Place object 172 is a directory that brings together a Place for organizational purposes. It also identifies the NSFs 114 as belonging to the place 172 by bearing the name of the QuickPlace. As distinguished from a place object 172, the main room 174 in a QuickPlace is a database called Main.nsf. Place object 172 groups and identifies the Main.nsf resources for the Place and any subrooms 194 in the Place. Place object 172 contains several files. There is a Main.nsf, Contacts1.nsf and a Search.nsf file. If the QuickPlace has a Subroom 194 there will also be an NSF file with its name starting with



"PageLibrary". Each of these page library files is a Room  
174.

The place object in PlaceBots 184: place object  
(directory) 172, contains the databases which form a place.

5 When writing PlaceBots, one can search for this directory by  
using the name of the QuickPlace. In this directory will be  
found all the databases will belong to that place 172. This  
file directory's name is the name of the QuickPlace. For  
example, if the QuickPlace is called "Millennia", this  
10 directory has the following path within the QuickPlace  
server 170:

\millennia

To find the place object 172 for the Millennium Place in  
LotusScript the script procedure of Table 2 may be used:

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15 **TABLE 2: SCRIPT PROCEDURE FOR FINDING A PLACE**

---

20 Dim ndbPlace As NotesDatabase  
Set dirPlace = New NotesDbDirectory( g\_sServerName )  
Set ndbPlace = dirPlace.GetFirstDatabase( DATABASE )  
sNdbPlaceFilepath = ndbPlace.FilePath  
If Instr(1, Lcase( sNdbPlaceFilepath ),  
|quickplace\millennia| ) Then  
'//the Place is found

---

## Room Object

Room object 174 is the main container for a Place, containing a collection of pages and tools. The Domino Equivalent an NSF Database. The room 174 is the main container for a QuickPlace's content. For example, when using the Millennia Place, most of what is seen is contained in the Room object. The Room object is always called Main.nsf, and holds folders 176 and pages 182 for the QuickPlace, as well as managing links to any subrooms 194 in the place object 172. Room object 174 uses elements held in other databases. For example many of the standard images QuickPlace displays are in a resources object (not shown). Each room 174 has its own security and authentication, and the information required to do this is contained in databases such as Contacts1.nsf. A room 174 breaks down a place 172 into smaller areas to help define structure. Each room 174 has its own security and authentication. This allows separate user groups. It also means that subrooms 194 can be created for separate projects, forming a separate shared space. The room object 174 then forms a common entry point where shared resources can be stored.

The room object in PlaceBots: to locate a room 174,

one looks in the main QuickPlace Server 170 directory, then looks into the room object (a directory bearing the name of the QuickPlace), then looks for a database called "Main.nsf".

5           Returning to previous LotusScript example of locating a Place 172 (Table 2), the match string can be extended from

"quickplace\millennia" to

"quickplace\millennia\main.nsf"

to find the room object 174, as set forth in Table 3.

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**TABLE 3: SCRIPT PROCEDURE TO FIND A ROOM OBJECT**

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```
Set dirPlace = New NotesDbDirectory( g_sServerName )
Set ndbPlace = dirPlace.GetFirstDatabase( DATABASE )
sNdbPlaceFilepath = ndbPlace.FilePath
If Instr(1, Lcase( sNdbPlaceFilepath ),
15 |quickplace\millennia\main.nsf| ) Then
  '//the Room id found.
```

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To access elements contained in a room 174, the views and folders 176 in the room are accessed. For example to find the elements visible in the Table Of Contents (TOC),  
20 the "h\_TOC" view is used.

The Room object 174 in HTML is visible in URLs as the "main.nsf". To access room object 174 most easily, a relative path is used from the current object if it is in the same Place 172. For example, when creating a URL link  
5 from a subroom 194 to a room 174, the URL begins as follows:

```
<a href="../../../Main.nsf/
```

where the "dot dot slash dot dot slash" syntax is a part of the URL, not an abbreviation for this example. Using this relative URL makes the URL more robust. In other words,  
10 this URL can be used to find the (Main.nsf) room 174 for any place 172.

Room fields 180 used to define rooms 174 are set forth in Table 4.

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**TABLE 4: FIELDS DEFINING ROOMS**

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<u>Field Name</u>	<u>Description</u>
h_HaikuName	The name of this Place
h_AreaType	The name of the template used to create this room.
h_AreaParent	The name of the parent database
h_ShowSecurity	If h_SetSecurity = 1, the QuickPlace server sets h_ShowSecurity to 1.
h_SetCalendar	Determines if the Calendar will be visible in a Room. If the field has the value of "1" a link to the Calendar will be displayed in the sidebar
h_SetSecurity	This field works in conjunction with the h_ShowSecurity field. It is only valid for Readers and Authors, because Managers must always be able to edit security of a Room. If the field is set to "1" a link to the Security page will be displayed in the sidebar for Readers and Authors (if they select Security in this case they will see only their own information)
h-MailDb	The name of the database that receives email addressed to this Place.

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***Folder Object***

A folder object 176 is an object for indexing content, grouping related pages 182, and dividing a room 174 into sections without imposing new security. The Domino

equivalent is Notes folder or view 206, and Notes folders 206 have three functions. For the user, they provide a logical grouping of related documents. This makes it easier for the user to find documents, and allows people with a shared interest to work an area of a QuickPlace. The other way of using folders is in the user interface, or "User" folders. Within user folders there are seven different types:

1. Standard List
2. Headline
3. Slide Show
4. Response List
5. Ordered List
6. Table Of Contents
7. Index

Folder types 1 to 5 are all available as styles for new, custom folders. From the a site manager's perspective, a Folder allows a QuickPlace to be divided into areas for separate groups of people, without having to be concerned about access control which would be necessary if a Subroom 194 were used.

Fields include the following:

LOT9 2000 0028 US1

30

"h\_LastAttachmentDirectory": used when getting attachments.  
This field enables users to quickly upload attachments. For  
example, each time a Layout file is uploaded, QuickPlace  
knows where to go looking for the file. This path  
5 information is sourced from this field.

"h\_DirtyAesthetics Number": indicates which items should be  
checked (once a part of the aesthetics has been tweaked, a  
check mark indicates that the part has been changed).

h\_AreaHasAesthetics: indicates if a Room has its own  
10 aesthetic settings enabled. If the field value is "1" the  
Room has had the aesthetics tweaked.

The third way that folders 176 are used is to allow  
developers to locate elements in a QuickPlace. To a  
developer, folders are indexes that allow look ups,  
15 therefore giving programmatic access to elements.

When any page renders in a Browser, the time it takes  
to render is directly dependant on the amount of information  
to be downloaded. The amount of information required to  
render a Folder is less than for a Page. When Pages appear  
20 in Edit mode, there is yet more information required to  
render it. Therefore, the quickest load time for a

QuickPlace by first using a folder 176 as the first page the user sees when upon selecting a place. Once users have visited a folder 176, a subset of the resources used to render a page 182 will already have been downloaded. The  
5 folders used by developers are slightly different to than the folders users would use. The h\_Index lists the published pages in the Place and appears as the standard index of a Place, and the h\_TOC is the table of contents list.

10 Some of the folders in look ups by developers are set forth in Table 5.



---

**TABLE 5: VIEWS USED TO REFERENCE OBJECTS**

---

<u>View Name</u>	<u>Description</u>
5      h_Index	Provides a list of all published Pages in a Room, listed by h_UNID, the unique identifier for a Page. Lists all published items in a Room, this not only includes Pages but all of the Objects in a Place. For example, Pages, PlaceBots, Fields, Skins and Forms.
10     h_QDK	Every Design Note in a Place. The h_QDK view contains a form formula to open different documents using different forms. For example: If the field "h_Type" is "0" then use the form named "h_Page". The result of this form formula is that the QDK view allows developers to inspect the properties of some Design Notes. The supported types are: "h_Page", "h_Folder", "h_Room", "h_SubRoom", "h_Error" and "h_RoomType".
15     h_TOC	List of all items displayed in the Table Of Contents. Items must have the "h_IsInTOC" field with a value of "1" and be published with no replication-save conflict.
20     (All)	Every item in the Room. Sorted by the h_Name field: the readable name of the item. For example "Welcome", representing the default Welcome page.

---

30            The Place Object in PlaceBots: Internally, default QuickPlace Folders have readable titles. For example the response folder discussion" has the internal name of "h\_Discussion" in the "h\_SysName" field. A new response

list style folder is called "SchwatzRaum" ("chat room" in German). The internal name of the SchwatzRaum Folder is:

"h\_F49791727035ACD1C12569510063087C" (which means

("h\_F49791727035ACD1C12569510063087C" in German). This

5 unique identifier can be used in PlaceBots to locate the Folder. A lookup can be done in the "h\_Folders" view of a QuickPlace to find the readable name of the folder. Another solution is to retrieve the name of the field by accessing the value in the h\_SysName field. The Table of contents and  
10 the Index are special user Folders 176. Only one TOC and one h\_Index exists per Room 174 or Subroom 194. They exist from the moment the Place or Room is instantiate, and change them.

### ***Folder Fields***

15 The following Fields are used to define data notes that render as Folders. Folders exist in a visible form within a QuickPlace. In other words they can be viewed by opening the NSF file in the Notes Client or Domino Designer. In conjunction with this view, a data note exists, providing  
20 information about that Domino View or Folder. Table 6 lists the fields are contained in the data note and provide information about the Domino View or Folder.

TABLE 6: FIELDS USED TO DEFINE FOLDERS

<u>Field Name</u>	<u>Description</u>
h_FolderStyle	When creating a new folder, one is given the choice to create a new folder based on a number of templates. This field denotes which type of folder has been created.
	"1" = Standard List
	"3" = Headline
	"4" = Slide Show
	"5" = Response List
	"7" = Ordered List
h_FolderStorage	The "internal" name of the folder, in other words, the name by which it is known to the system. The value of this field is used in documents to tell QuickPlace in which folder it should be used.
h_CanAddPages	When creating a new folder, the manger is presented with the options, to the question "Who can add pages to this folder?". If only managers is chosen the value of "0" is written to this field. The default is "" which means all authors can add pages to this folder.

### *Form Object*

A form object 178 is a document used to create new QuickPlace content. The Domino equivalent is a data note of type "h\_Form". Form object 178 is a resource used to create, manage and display content, therefore defining the schema of the application. Forms contain fields to hold

data, therefore creating and displaying content. Forms can also contain scripts within them to provide logic within the Page. For example, a form can contain form validation to make sure that a field contains only numbers. Forms can  
5 also initiate processes outside the page. This is done by creating a PlaceBot 184 and associating the PlaceBot with a Form 178. PlaceBots 184 are not contained by the Form but there is a association between them.

Forms are created with the Domino Form "h\_PageUI" with the field h\_Type set to "h\_Form". New forms 178 with custom structure and logic can be created by room managers.

### ***Form Fields***

Table 7 sets forth the fields 180 used to define the structure of a form 178.

TABLE 7: FIELDS USED TO DEFINE FORMS

<u>Field Name</u>	<u>Description</u>
h_FormDescription	The content of this field appears as the description of the form appearing in the "New" page.
h_WorkflowType h_ApprovalCycle	Allows 1-4 approvers and some other options. This is normally set to "h_Standard".
h_EditorInChief	Allows 1 approver and fewer options.
h_MultipleEditors	By setting this field, all members of QP to edit pages created with this form.
h_Standard	None of the above.
h_SetPageComponent	sView Should = h_FieldDefinitions

### Field Object

Field object 180 is used to construct (HTML formatted) input fields in forms 178. The Domino equivalent is a Data note of type "h\_Field". Fields are constructed from the Domino Form "h\_PageUI" with a the field h\_Type set to "h\_Field".

QuickPlace field object 180 defines the structure of the container, not the content. The values contained in a

page 182 are contained by the page, not the fields 180. The h\_FieldType attribute to a field 180 determines what sort of field it is. This determines what the field will do when it is rendered in a browser. For example, a field 180 of type h\_DateControl will provide the user with a date picker widget.

Domino fields are used to define the attributes of QuickPlace fields 180 are set forth in Table 8. QuickPlace fields 180 are drawn to the screen as HTML, they are not created by a Domino Field in a Domino Form.

TABLE 8: FIELDS USED TO DEFINE FIELDS

<u>Field Name</u>	<u>Description</u>
h_IsUser	Defined h_True means this is a custom form
h_PublishInFolder	UNID of the folder + " " +
h_FolderStorage	name of the folder
h_Name	"Import" and is related to the h_SystemName field which often has a similar value such as "h_Import".
h_FieldLabel	Instructional information that might be useful for someone editing this field. Similar to the Static h_FieldType. Containing information to help the user, but only displayed in edit mode." For example: <script> (h_CurrentSkinType ==



Object = 182

	"h_Subject"=	The Documents subject.
	"h_TaskControl"=	Used in the Task form to insert the task control tool.
5	"h_TextInput"=	Simple text equating to the "<input>" field in HTML.
	"h_TextPopup"=	Text select list, equating to the "<select><option>" in HTML.
	"h_TimeControl"=	Select lists for hours, minutes, AM/PM.
10	"h_CalendarControl"=	Field containing control tool used in the calendar field.
	"h_CreateMSExcel"=	Field enabling the upload of Excel documents.
	"h_CreateMSPowerPoint"=	Field enabling the upload of PowerPoint documents.
15	"h_CreateMSWord"=	Field enabling the upload of Word documents.
	"h_Import"=	Field enabling the upload of imported documents such as HTML.
20	"h_MultipleImport"=	Field enabling the upload of multiple documents, such as a series of HTML documents.
25	"h_NotifyIndicator"=	Field indicating if members should be notified of the creation of content or their inclusion in the Contacts1.nsf.

---

### ***Page Object***

Page object 182 is a basic building block for content. The Domino equivalent is a data note, form and subform.



Pages form the basic units of content, relying on the structure of QuickPlace to create, manage and render them in a Web browser. It differentiates structure and content cleanly. Notes structural elements such as Forms Views and so on provide structure, whereas Notes Documents provide pure data content. In the Domino environment the division between structure and content becomes blurred. This is because when the data in a document is being represented in a Web browser, it is possible to use the data to format itself using HTML. The data is able to start defining structure by creating HTML links, tables, references to images and so on. In the QuickPlace OM, the same is true. Pages can be created in a number of ways. Table 9 sets forth the fields used for defining page objects.

---

**TABLE 9: FIELDS DEFINING PAGE OBJECTS**

---

h_NotInSearch	Having the value of "1" will exclude the field from being included in a full text search. This allows functional content in fields such as JavaScript or static text to evade returning a hit during searching.
h_Position	Indicates the fields position of appearance in a form. Typically numbers such as 100 are used.
h_FieldFormat	"h_FieldFormat" indicates formatting options, "h_All" "h_BannerOptional"

"h\_BannerRequired"

	h_BannerRequired	Always display subject as a banner at top of page
	h_BannerOptional	Allow user to choose banner or not
5	h_NoBanner	Do not display the subject on the page
	h_FieldIsRequired	1 = The field is required and the user will be prompted if they do not fill it out.

---

### *Page Fields*

10           Page Object in LotusScript and JavaScript: developers  
wanting to customize pages 182 will generally want to  
manipulate the page's field 180 values. Fields existing in  
a Page are generally rendered to the HTML document in the  
background as JavaScript variables. They are then visibly  
15 rendered via document.write() functions. If a field exists,  
it can be accessed in the browser via a variable with the  
same name as the field.

The PageBody Field holds the main content or "body" of  
the page.

20           Table 10 sets forth the fields 180 used to define page  
182 documents in QuickPlaces.

TABLE 10: FIELDS USED TO DEFINE QUICKPLACE PAGES

<u>Field Name</u>	<u>Description</u>
h_Form	The QuickPlace form used to create this page. This is not the Domino "Form" field which denotes which form Domino links the file to. The Domino "Form" field will contain "h_PageUI" for virtually all objects in a QuickPlace.
h_PageType	This field is set to null when the document is a visible document. Only when the object is in design mode do the other values appear:  "h_Response" the document is a response to a topic document. This value is only valid in response folders.  "h_Revision" this means that the document is being revised, and is not available for public access.  "h_Mail" means that the document is a mail document, being either sent or received by QuickPlace.
h_Originator	The creator of this page. This field contains a full hierarchical name, for example: "CN=David Wyss/OU=QuickPlaceName/OU= QP/O= ServerName". All users have the second OU part of the name set to QP. This is done so that when QuickPlace is used on an Overlay server (QuickPlace and Domino together) QuickPlace can avoid conflicts between Domino registered users and QuickPlace users.
h_NameIsBanner	Denotes if the page's name should be displayed as a banner. If it is to be displayed as a banner, this field contains the value "1". Setting this field is done when the user clicks on

the "Show the title, author and date on page?" checkbox.

---

5       The JavaScript "document.write" method is used when using the PageBody to write out HTML content in a QuickPlace page. This field can be printed onto the screen via a document.write(PageBody) method called in a QuickPlace document. The following is an example of using this technique.

10       In a Placebot, write the contents of the document into the PageBody field. If the PlaceBot has not run, or not run correctly, the PageBody field will be empty. If the document is displayed in a form where the PageBody JavaScript variable is not declared, an error will be  
15       reported. To avoid an error through an undefined variable, use the "typeof" operator. This test assigns a message string to the sPageBodyMessage variable and prints that instead of the PageBody. To customize this message, the text in quoted on the PageBodyMessage line is changed. Then  
20       the following is included in the HTML document:

```
<script language=JavaScript>
  if ( typeof( PageBody ) == "undefined" ) {
    var sPageBodyMessage = 'Run the Mapperizer PlaceBot
```

to see a site map here...';

```
document.write( sPageBodyMessage )
```

```
} else{
```

```
document.write( PageBody )
```

```
}
```

```
</script>
```

Page Object in HTML: some of the most commonly referenced JavaScript variables in Pages are set forth in Table 11.

**TABLE 11: COMMONLY USED JAVASCRIPT VARIABLES IN PAGES**

<u>Field Name</u>	<u>Data Type, Description</u>
h_Name	String, readable name of the Page
PageBody	String, content of the page.
h_SystemName	String, the internal name of a page. For example, 'h_Welcome'
h_Originator	String, full Notes format name of the document creator For example: 'CN=Anna Rath/OU=Millennia/OU=QP/O=Server';
h_IsPublished	String, number representing "1" for published or "0" for not published.
h_LastTimePutAway	String, representing the date and time the Page was last saved '09/03/2000 07:54:08 PM'
Form	String, Domino Form name used to create the Page. Most documents in a QuickPlace are created with the

'h\_PageUI' Form. The value that differentiates fields is the h\_Type field.

5	HTTP_COOKIE	String, all cookies available to that Page.
	HTTP_HOST	String, name of the server. For example 'millennia.com'
	HTTP_REFERER	Page used to send the user to this page.
10	HTTP_USER_AGENT	String, browser used to access the current Page. For example: 'Mozilla/4.0 (compatible; MSIE 5.0; Windows NT; DigExt)'
15	REMOTE_USER	String, full name of the person reading the Page, for example: 'CN=Doug Mudge/OU=Millennia/OU=QP/O=Server';
	Server_Name	String, the server name, for example: 'dwyss.lotus.com'
	h_DocSize	Integer, size of the page, for example: 4705
20	h_ModifiedDate	String, date and time the page was last saved, for example: '09/03/2000 07:54:05 PM';

---

Using Notes name format in pages can be done with the following JavaScript Function:

```
function fnGetSimpleName(sTxt) {  
    iTxtStart = sTxt.indexOf('=');  
    iTxtStart++;  
    iTxtEnd = sTxt.indexOf('/');  
}
```

```

    if(iTxtEnd == -1) iTxtEnd = sTxt.length;
    sTxt = sTxt.substr(iTxtStart,iTxtEnd - iTxtStart);
    return sTxt;
};
5    return fnGetSimpleName('CN=Doug Mudge/OU= Millennia/OU=
    QP/O=Server')

```

This JavaScript will return the string "Doug Mudge"

### *PlaceBot Object*

A PlaceBot object 184 is a Java or LotusScript Domino  
 10 Agent, used to create or manipulate QuickPlace objects  
 automatically. Domino Equivalent: Domino Agent.

For Java and LotusScript programmers, the PlaceBot is  
 the main way of implementing sophisticated functionality to  
 a QuickPlace. Within the bounds of an HTML document,  
 15 industry standard authoring tools such as HTML are used. To  
 make links between Objects and manipulate QuickPlace  
 Objects, PlaceBots are used.

## *Theme Object*

A theme object 186 is a group of files which defines the look and feel of a QuickPlace. The Domino equivalent is a group of data notes.

- 5 Themes are a mechanism for determining the layout and appearance of a QuickPlace. They also help introduce functionality, and although not their primary function, some content. There are two types of themes 186 in QuickPlace. User defined or custom themes" and default Themes.

## *Subroom Theme Object*

10 The subroom theme object 188 is a subset of themes 186 in a QuickPlace. The Domino equivalent is a data note. By default, subrooms 194 inherit the theme 186 being used by the (main) room 174. Only when the theme being used in the  
15 subroom 194 has been modified, does it act independently of the room 174.



## Member Object

A member object 190 is a data note listing a user in the Contacts1.nsf. The Domino equivalent is a note in contacts1.nsf. Members 190 are records specifying user-access to a room 174. A member note contains information about a team member of a QuickPlace. In addition to this data, the member must be listed in the access control list (ACL) of main.nsf and in a group in names.nsf to pass authentication.

Table 12 sets forth the fields 180 used to define members 190.

---

**TABLE 12: FIELDS USED TO DEFINE MEMBERS**

---

<u>Field Name</u>	<u>Description</u>
h_Password	This member's password. Encrypted with @Password
h_FirstName	This member's first name
h_LastName	This member's last name
h_PhoneNumber	This member's phone number
h_EmailAddress	This member's email address

---

Table 13 sets forth the fields 180 used to define

Groups.

---

TABLE 13 FIELDS USED TO DEFINE GROUPS

---

<u>Field Name</u>	<u>Description</u>
h_Members	The list of members who belong to this group, listed in full heirarchical format.

---

#### *Subroom Member Object*

A subroom member object 192 is a subset of entries in the main room 174 of a QuickPlace. The Domino equivalent is a Data note in contacts1.nsf. Subroom member 192 has a similar structure to a room member 174, but specifies user-access to the SubRoom. These SubRoom members 192 are a subset of the (main) room 174 members list. This means that to grant access to new users, they must first be added as readers (or greater) in the main room 174.

#### *SubRoom Object*

A subroom object 194 is a container within a QuickPlace

with separate security to main Room. The Domino equivalent is an NSF Database. Subrooms 194 are similar in structure to Rooms and are used to create discreet meeting places for subset of the Members in a Place.

5           The subroom object in PlaceBots: To locate a room, look in the main QuickPlace Server directory, then look into the Place Object (a directory bearing the name of the QuickPlace). The Subroom will be named "PageLibrary" followed by a 16 digit hexadecimal time stamp number , such as "0123456789ABCDEF" then the ".nsf" suffix. By way of example, the following script looks for a Subroom to the Millennia place:

10  
15  
20  
Set dirPlace = New NotesDbDirectory( g\_sServerName )  
Set ndbPlace = dirPlace.GetFirstDatabase( DATABASE )  
sNdbPlaceFilepath = ndbPlace.FilePath  
If Instr(1, Lcase( sNdbPlaceFilepath ),  
    |QuickPlace\millennia\pagelibrary| )  
Then

The Instr method has been used to look for this database, down to the PageLibrary part of the string, because it is difficult to know what the 16 digit number will be.

Page Object in HTML: To create URLs to reference Subrooms, the URL is built in the Main Room using either the "h\_Area" view or the "h\_TOC" view to create the path. This View contains the "h\_LocDbName" field as the first sorted column.

5

### ***Resources Object***

A resources object(not shown) is database of shared resources, having as its Domino equivalent NSF Database. It serves as a centralized container for resources required in all QuickPlaces on a server. Images, layout files and fonts are stored in this database. For example resources such as the button that appears beside the simple search image "Go.gif" is stored in this database. The easiest way to find items in this database is by scrolling through the h\_SystemNameView. A dummy form may be used to view such elements.

### ***Common QuickPlace Object Fields***

In Tables 14 through 18, fields and JavaScript variables in the h\_PageUI form are set forth. These include general fields which can be customized for each layout,

fields to define publishing status, fields for defining locations, fields for defining security, fields for defining workflow status, fields for defining calendars, respectively.

5

**TABLE 14: GENERAL FIELDS IN THE h\_PageUI FORM**

<u>Field Name</u>	<u>Description</u>
h_Authors	Names of Authors who can edit the document. This is a particularly important field when creating PlaceBots which modify the access control to documents.
h_CurrentSkinName	Name of the Theme to be used in the page
h_CurrentSkinType	Name of the Skin to be used, such as Edit: "h_Edit", or for a custom Theme the ID: "c_E4257D50EE2DD800C12569440019C164"
h_FolderUNID	The system name of the folder the page belongs to. For example: "4695CA1530263B3AC1256946005E965C" -the internal code for a Folder, or "" when the page only appears in the TOC.
h_Form	The id of the QuickPlace-Form used to create the page, for example: "30DF3123AEFAF358052567080016723D". Note, that the form referred to here is actually a data note and not a Notes Form.
h_IsInToc	If the page should appear in the TOC, it is set to "1". If it does not appear there, it is set as "".



document.

PageBody

The content or "body" of the page. If using the JavaScript "document.write" method to write out HTML content in a QuickPlace element, such as an imported page, skin and so on, it is normal to do this via the PageBody field. This field can be printed onto the screen via a document.write (PageBody) method called in a QuickPlace document. To do this in a page, the document.write method is used to print the contents of this field to the page.

System objects have special meaning depending on the type of object. The following tables describe fields in various QuickPlace Object types.

TABLE 15: FIELDS USED TO DEFINE PUBLISHING

<u>Field Name</u>	<u>Description</u>
h_IsPublished	1 = This object is currently published
h_IsHidden	1 = This object is not shown to the user
h_SetReadScene	The name of the default scene (subform) to use when viewing this object
h_SetEditScene	The name of the default scene (subform) to use when editing this

object

5	h_PublishedVersionUNID	If this object is being edited and the current object is the draft version, the UNID of the published version of this object.
	h_DraftVersionUNID	If this object is being edited and the current object is the published version, the UNID of the draft version of this object.
10	h_LastTimePutAway	The last time that this object was changed: Published or Saved under construction.

TABLE 16: FIELDS USED TO DEFINE FOLDERS LOCATION

	<u>Field Name</u>	<u>Description</u>
15	h_FolderUNID	The name or UNID of the Notes Folder where this page resides.
	h_IsInToc	1 = This object is shown in the Table of Contents (sidebar).
20	h_CurrentPosition	The position of this object with respect to other objects in the collection.
	h_SetParentUNID	If this is a child or response object, the UNID of the parent object.



TABLE 17: FIELDS USED TO DEFINE SECURITY

<u>Field Name</u>	<u>Description</u>
h_Readers	If this object is protected from readership, the list of names, groups, and or roles that can read this object.
h_Authors	If this object is protected from authorship, the list of names, groups, and or roles that can author this object.

#### *QuickPlace Object Model and HTML: Building URLs*

Building URLs in a QuickPlace is an important issue, due to the fact that QuickPlace is a browser based application. Understanding QuickPlace URLs is also a good way of understanding the object hierarchy in QuickPlace. The relationship between URLs and the QuickPlace Object model flows in both directions. Understanding the structure of URLs helps understanding the QuickPlace Object model. Conversely, once the QuickPlace object model is understood, how to use URLs to manipulate a QuickPlace becomes apparent.

URLs in QuickPlace use the same structure as in Domino. Domino URLs allow locating documents by using the key value

of the first sorted column of a view, then generate a URL to link to a document using this key. Once the documents are located, they are not always opened in the browser.

Sometimes they are read and their contents exposed and used  
5 by other objects.

An example of locating a file without opening it is when a QuickPlace skin accesses a JavaScript LSS file. The user never sees the LSS page, but its contents are used by the visible page to render objects and perform functions.

10 To locate a document in Domino, the initial part of the URL is pointed to the host server, then the database containing the required document. The next part of the URL must point to a view with the first column specified as being sorted. This first, sorted column becomes the key column. Then a  
15 URL is used to open the document, as in the following example:

`http://Host/Database/View/Key?DominoURLCommand`

Where:

20 View: is the name of the view. To access a document regardless of the view, substitute a zero (0) for the view name and specify the document by

its universal ID.

Key: is the string, or key, that appears in the first sorted or categorized column of the view. If the key has spaces in it, substitute these for plus signs when creating a URL.

This syntax is used to open, edit, or delete documents and to open attached files. Domino returns the first document in the view whose column key exactly matches the Key. There may be more than one matching document; Domino always returns the first match. The key must match completely for Domino to return the document. However, the match is not case-sensitive or accent-sensitive.

DominoURLCommand: Is the instruction to Domino of what to do with the file when found. For example, ?OpenDocument, ?EditDocument and ?DeleteDocument.

If this DominoURLCommand is omitted a default will be substituted. For example, in the previous URL if the OpenDocument argument is omitted in a URL command the document will still open because the command is automatically interpreted as OpenDocument.

The structure of URLs in a QuickPlace is the same as in any Domino database. QuickPlace objects are quite often referred to via relative URLs. For example, to reference a page that has been created, the following

5 syntax is used:

../../../../h\_View/PageName?OpenDocument

Where: " ../../.." section at the front of the URL creates a relative URL, is interpreted by the Domino server as referring to the parent objects of the current object

10 (h\_View and PageName).

Examples:

http://www.mercury.com/register.nsf/Registered+Users/Ja  
y+Street?OpenDocument

http://www.mercury.com/register.nsf/0/466c5172561e1c5c8  
15 52566c2005f6bbb?OpenDocument

Many QuickPlace objects in QuickPlace have internal names beginning with "h\_". This is refers to the internal name of QuickPlace which is "Haiku". To reference images, JavaScript library files or files other than pages, the

following syntax can be used...

```
../../../../h_Index/Document+Name/$File/Imagename.gif?
```

```
OpenElement
```

Or...

```
5      ../../../../h_Index/Document+Name/$File/ScriptLibName.js?Open  
      Element
```

Many objects in QuickPlace can be located via the h\_Index View. It contains links to many of the published objects in a QuickPlace. When referencing a JavaScript file the  
10 ?OpenElement argument is used. This is to tell Domino that the file being accessed is not a page to open, which is the default action.

### ***Overview: Whatsnew***

15 In accordance with a further embodiment of the invention, a user can at any given time inquire of QuickPlace what has been changed, such as membership, pages, and so forth, and receive a report with respect to those

aspects the user is authorized to access.

#### ***Overview: Same Time, or Chat***

5 In accordance with a further embodiment of the invention, integrated with QuickPlace are synchronous based communications allowing users to identify and communicate directly with other users visiting the same place.

#### ***Overview: Quick Browse***

10 In accordance with a further embodiment of the invention, selection of quick browse opens a new window and creates a set a links to control the main window without losing the context. Context appears in a separate window in a simpler HTML format. Selection of an item in that separate window, causes the page or room (if link is to a room) to be displayed in the main window. QuickBrowse is a  
15 window that can be popped up by clicking a remote control icon in search results and in whatsnew. It enables users to browse links generated by these functions in a random-access order. When the user clicks a link in the quickbrowse

window, the main window is reloaded with the target page.  
This is distinguished from Quick search, which is the search  
field and green button that is embedded in QuickPlaces like  
in most web sites, so that users can enter a search term and  
5 perform a search in a single click - i.e., without first  
having to go to a special search page.

### ***Anatomy of a QuickPlace Theme***

Each theme is composed of a group of layouts that  
define the appearance of specific QuickPlace components.  
10 For example, the layout for a page differs from the layout  
of a folder, but they will probably share some style  
elements as part of a common theme. Table 19 sets forth the  
layouts and style sheet of a QuickPlace theme.

TABLE 19: SKIN GROUP COMPONENTS

<u>Layout</u>	<u>File type</u>	<u>Purpose</u>
Page	.htm	Defines the appearance of a page being read
5 Page editing	.htm	Defines the appearance of a page being edited
List folder	.htm	Defines the appearance of a List or Response folder
10 Headlines folder	.htm	Defines the appearance of a Headlines folder
Slideshow folder	.htm	Defines the appearance of a Slideshow folder
Stylesheet	.css	Defines styles such as fonts and colors for all layouts

15 In most cases, a single theme can be used to customize the look of page, list folder, and slideshow folder.

Additionally, JPEG or GIF graphic files can be imported to represent a theme in the Custom Theme Gallery.

20 Table 20 shows the components that can be customized for each layout.



TABLE 20: CUSTOMIZABLE LAYOUT COMPONENTS

Component Name	Page	List folder	Slideshow folder	Headlines folder	Edit
Logo	x	x	x	x	x
Page content	x	x	x	x	x
Actions	x	x	x	x	x
Help	x	x	x	x	x
Table of Contents	x	x	x	x	
Path	x	x	x	x	
QuickSearch	x	x	x	x	
WhatsNew	x	x	x	x	
AdvancedSearch	x	x	x	x	
SignIn	x	x	x	x	
Offline	x	x	x	x	
Chat	x	x	x	x	
Notify	x	x	x	x	
Print	x	x	x	x	
Tutorial	x	x	x	x	
PageTitle	x	x		Note 1	x
Navigation	x	x	x	Note 2	
Jump	Note 3	x	x	Note 2	
AuthorandModified	x	Note 3	x	x	
Revision	x	Note 3	x	x	
HeadlinesFolder				x	
Notes:					
1. Although the PageTitle component can optionally be included in a Headlines folder, this component would normally be omitted and the page title displayed prominently instead.					
2. The Headlines Folder is designed to provide a headlines style of navigation in place of the previous/next navigation used in other folder types. Therefore, the Navigation and Jump components are not normally used in the Headlines Folder layout.					
3. The Jump component can be included in the Page layout and the AuthorAndModified and Revision components in the ListFolder layout. These components will all display as "empty", using the HTML parameter emptyFormat.					

## ***Modifying an Existing Theme***

In accordance with a preferred embodiment of the invention, a QuickPlace theme is customized by beginning with the theme closest to what is desired, extracting the HTML source files for the theme, customizing them, and  
5 uploading the modified files as a custom theme.

### ***Style Sheet Selectors in QuickPlace***

Referring to Figure 12, a typical QuickPlace user interface 370 includes a sidebar (TOC) 372, page title 374, author and modified field 376, actions bar 378, logo 380, path 382, page content 400, and actions buttons, such as quick search 384, advanced search 386, whatsnew 388, chat 390, notify 392, print 394, tutorial 396 and help 398. Each  
10 of these is customized by using tags or selectors which deal with borders, background, text, and so forth, in accordance with a style sheet.

A standard default stylesheet is always output with any theme, so that one need only to specify the selectors that  
20 are to be changed. Undefined properties will fall back to

those defined in the default stylesheet.

Tables 22 through 32 describe Style Sheet (CSS) Selectors.

5

**TABLE 22: Tag Styles**

<u>CSS Selector</u>	<u>Description and Notes</u>
body, td	Default text style. Note: specify both tags to set the default text style.
a	Anchor style. Note: see also several other more specific anchor styles, below.
a:hover	Default style of anchors when mouse is over the anchor. Note: IE only.
form	Default style of forms. Note: The margin-bottom property is set to 0px by default to remove unwanted whitespace from the bottom of all forms.
(Note: Other tags, such as h1, h2, etc., can also be styled as needed.)	

**TABLE 23: Page Background**

<u>CSS Selector</u>	<u>Description and Notes</u>
.h-page-bg	Page background. Note: class assigned to body tag of all pages. For IE only, the margin properties can be set to control the page margin.

**TABLE 24: Folders, What's New, Search Results,  
Tasks (list view)**

	<u>CSS Selector</u>	<u>Description and Notes</u>
5	.h-folderBanner-bg	Background of folder banner. Note 1.
	.h-folderBanner-text	Text in folder banner. Note 1.
10	a.h-folderBanner-text	Anchors in folder banner. Note 1.
	.h-folderBannerSelected-text	Text of selected ("current") item in folder banner. Note 1.
15	a.h-folderBannerSelected-text	Selected anchor in folder banner. Note 1.
	.h-folderItem-bg	Background of items listed in folder. Note 1.
	.h-folderItem-text	Text of items listed in folder. Note 1.
20	a.h-folderItem-text	Anchor listed in folder. Note 1.
	.h-folderCompact-text	Compact text of item listed in folder. Note 1.
25	.h-folderAbstract-text	Abstract text of item listed in folder.
	.h-folderBar-bg	Background of bar to left of a thread.
30	.h-folder-dl {	Indentation of responses in response folder. Note: by default, the margin-bottom property is set to 0px to remove unwanted whitespace below indented items in

response folders.

.h-folderInterspace-bg { } Background color of vertical space between responses.

5 .h-folderInterspace-text { Height of vertical space between responses. Note: use font-size to set the height.

.h-folderSpace-text { Height of vertical space between threads. Note: use font-size to set the height.

10 Note 1: This style is used for the banner that displays column titles, as well as other banners in What's New, Search Results, etc.

TABLE 25: What's New

<u>CSS Selector</u>	<u>Description and Notes</u>
15 .h-whatsNewBanner-bg	Background of outer box in right column of What's New.
.h-whatsNewBanner-text	Text of outer box in right column of What's New.
20 .h-whatsNewBox-bg	Background of inner box in right column of What's New.
.h-whatsNewBullet-text	Bullet to left of items listed in What's New.

TABLE 26: QuickBrowse "remote control" window

<u>CSS Selector</u>	<u>Description and Notes</u>
.h-quickBrowseTitle-text	Title displayed in QuickBrowse window.
5 .h-quickBrowseBullet-text	Bullet to left of items listed in QuickBrowse.
.h-quickBrowseItem-text	Text listed in QuickBrowse.
a.h-quickBrowseItem-text	Anchor listed in QuickBrowse
10 .h-quickBrowseNav-text	Navigation link displayed in QuickBrowse.

TABLE 27: Tasks (timeline view)

<u>CSS Selector</u>	<u>Description and Notes</u>
.h-tasksBannerNow-textbg	Highlighted current date in Tasks banner.
15 .h-tasksItem-bg	Background of items listed in Tasks.
.h-tasksItemTimeline-bg	Highlighted period of a task.
.h-tasksItemMilestone-bg	Highlighted period of a milestone

TABLE 28: Calendar

	<u>CSS Selector</u>	<u>Description and Notes</u>
	.h-calendarLabel-text	Date label.
	.h-calendarLabelSelected-text	Date label (today's date).
5	.h-calendarItemOther-bg	Background of day not in current month.
	.h-calendarItemToday-bg	Background of today's date.

TABLE 29: Text and fields in Page layout

	<u>CSS Selector</u>	<u>Description and Notes</u>
10	.h-field-text, .h-field-text td	Style of the text value of a field. Note: use this exact selector, as shown, to style field text distinctly from regular page content.
15	.h-pageSmall-text	"Smallprint" page text.
	.h-fieldSmall-text	"Smallprint" text content of fields.
	.h-fieldHeader-bgtext	Field header.
20	.h-fieldOrder-bgtext	Number to the left of the field header.
25	.h-page-text a:visited	Anchors inside the pageContent skin component which have been visited. Note: IE only.

TABLE 30: Edit Layout

	<u>CSS Selector</u>	<u>Description and Notes</u>
	.h-fieldHeaderEdit-bgtext	Field header
5	.h-fieldEdit-text, .h-fieldEdit-text td	Field description text. Note: use exact selector, as shown.
10	.h-fieldOrderEdit-bgtext, div .h-fieldOrderEdit-bgtext td	Number to the left of the field header. Note: use exact selector, as shown. All properties in this selector must be marked ! important to take effect. E.g., color: green! important.
15	.h-fieldSmallEdit-text	Small field text. Note: all properties in this selector must be marked ! important to take effect.
20	.h-fieldSpecialEdit-text	Special field text. Note: used in Task Info field. All properties in this selector must be marked! important to take effect.

TABLE 31: QuickSearch

	<u>CSS Selector</u>	<u>Description and Notes</u>
25	.h-searchField-text	Style of the text field associated with the quickSearch skin component.



**TABLE 32: Classes defined by the default theme**

5 The classes listed below are not built in to QuickPlace, but are defined by the default theme's stylesheet. (Custom themes are not required to use these classes, and are free to define any other classes as appropriate.) However if modifying the default theme, these classes can be modified to get a particular effect.

	<u>CSS Selector</u>	<u>Description and Notes</u>
10	.h-logo-text	Logo text.
	.h-heading-textbg	Heading about table of contents and tools boxes.
	.h-sidebar-bg	Background of table of contents and tool boxes.
15	.h-toc-text	Text of item listed in table of contents.
	.h-tocSelected-text	Text of selected item listed in table of contents.
20	.h-nav-text	Navigation link.
	.h-tool-text	Tool link.
	.h-signIn-text	Sign In link.
	.h-actionButtonBorder-bg	Border of action button.
25	.h-actionButton-bg	Background of action button.
	.h-actionButton-text	Text of action button.
	.h-actionSpace-text	Space between action buttons.
	.h-pageTitle-textbg	Page title.
30	.h-pageAuthorMod-text	AuthorAndModified text.

Revision link (draft | published).

Selected revision link

Accent color. E.g., used  
in rule at bottom of  
page.

Background of unselected  
tab in headline folder.

Text of unselected tab in  
headline folder.

Background of selected  
tab in headline folder.

Text of selected tab in  
headline folder.

Background of edit layout  
"docket".

Text of action button in  
edit layout.

Border of action button  
in edit layout.

Background of action  
button in edit layout.

Shadow. Note: used in sidebar and in edit layout "docket" shape.

"Missing" corner of  
shadow area.

## *File System Directory Architecture*

In accordance with the preferred embodiment of the invention, every new QuickPlace created gets its own directory under the QuickPlace master directory. The name of that directory is same as the name of the QuickPlace. Each additional room in the QuickPlace is another file (.nsf) in the QuickPlace directory. During the QuickPlace server installation, the default QuickPlace (also called the "Welcome" QuickPlace) with the name of QuickPlace is automatically created. This is the entry point to the QuickPlace server including the server administration. Figure 8 shows the directory structure, along with the files in "Welcome" QuickPlace, in a stand-alone QuickPlace server.

For example if Millennia is the a current QuickPlace, then the basic infrastructure of the Millennia QuickPlace resides under

`\lotus\domino\data\quickplace\millennia`

(on Domino server - given that

\lotus\domino\data

is the data directory) or

\lotus\quickplace\data\quickplace\millennia

(on stand-alone - given that

5           \lotus\quickplace

is the QuickPlace installation directory).

When QuickPlace server is installed, the "Welcome" region or the "Administrator's Place" is pre-configured to allow an entry point to the QuickPlace server. An administrator can then administer the newly installed QuickPlace server from this entry point. This so called administrative QuickPlace resides under the QuickPlace directory which in turn is under the data directory. For an example it is

15           c:\lotus\domino\data\QuickPlace\QuickPlace

when installed under Domino, and

c:\lotus\QuickPlace\data\QuickPlace

when in stand-alone mode. It contains the following files:  
Main.nsf, Contacts1.nsf, CreateHaiku.nsf, Admin.nsf. The  
templates for these Domino databases reside in the directory  
5 named AreaTypes. The "Welcome" page may be configured to  
suit the needs of an organization.

### **Security**

10 The security can be controlled at two levels: (1) from  
the server's administration perspective - Managing the  
QuickPlace server; and (2) from each QuickPlace's  
perspective - Managing a QuickPlace.

15 A server administrator can restrict who can create a  
new QuickPlace on the server and also who can administer the  
QuickPlace server. The SSL encryption can also be  
controlled by the server administrator. The SSL encryption  
is effective server wide and cannot be controlled at a  
QuickPlace level. All this can be accomplished via security  
screen. At the QuickPlace level, the administrator can  
control who can read the information, which users can create

the information, and who can administer the particular QuickPlace. Anonymous allows everyone access without authentication.

### **WHAT'S NEW**

5           It is a characteristic of busy collaboration spaces that many things are happening in different rooms, and it isn't obvious what those things are. There is a need to for a system and method for providing users of collaboration space knowledge of events and happenings throughout the  
10 place that are of current interest, including scheduled events or tasks that current, and what has been recently changed.

          In accordance with a preferred embodiment of the invention, a user may receive a report of what is new,  
15 either scheduled or on request, such as by clicking on a place or an E-mail component. What ever is selected, the displayed result is personalized to the individual user, including security. The scope of the what's new page may be, for example, user specified as daily or weekly.

20           A what's new display, in accordance with this

embodiment of the invention, extends to all elements, such as pages, tasks, events, folders, rooms, members, groups, today's events & tasks due, and email received.

5 A what's new time line may include, for example a period including today plus the preceding seven days and the succeeding seven days, so as to anticipate further events and tasks due.

10 Referring to Figure 11, each room in collaboration space is implemented as a database 310-312. A Notes view 314-316 and folder 318-320 is associated with each such database. Using notes security, each person looking at view sees what is authorized to see. Folder 318-320 is updated every night, for example, by taking a snap shot of view 314-316. This update can also be done upon request, which will cause view 314-316 to be immediately copied to folder 318-320. When each user request for what's new, filtering on user authorization and scope occurs.

20 A manager can configure a newsletter, deciding whether to send e-mail, each part of its contents, and its frequency, such as daily or weekly. The manager can customize what people can get via E-mail, and each member can accept or disabled the E-mail.

Nightly, for example, QuickPlace updates what's new, sends newsletter (which may be implemented, for example, as IIS, Microsoft stack) and cleans up returned email.

Referring to Figure 11, a place comprises a plurality of rooms, each room represented, respectively, by a room database 310-312. Each has a view 314-316, respectively, which views are maintained up to date per formula. These views, when updated, such as every night and whenever someone updates, are copied into respective folders 318-320. When a user asks what's new in step 328, in step 322 QP server 100 opens the contents of folders 318-320, in step 324 processes the data, using access control list and other Notes security, and in step 326 generates HTML from that data to reorganize it for display 330. Step 326 html is created with all links and, in a preferred embodiment of the invention, quick browse feature 304 in window 330 which, upon user selection, generates display 332 presented at browser 112. This is just the on-line part. Off line, step 326 is create and send mail (not html), which it does on behalf of each member of the room. User selection of quick browse 304 opens a new window 332, creates a set a links to control the main window 112 without losing the context. Context appears in a separate window 332 in a simpler html format. Selection of an item in that separate window 332,



causes the page or room (if link is to a room) to be displayed in the main window 112.

In accordance with a further embodiment of the invention, a team version of a what's new newsletter can also be collected in the QuickPlace, enabling users to browse a set of changes efficiently, and to review past newsletters. Users can also click quick-search links to answer common queries such as "what's changed in this QuickPlace today?".

News Email provides an overview simple enough that it's useful to receive and quick to scan through. It may be composed and delivered nightly, weekly, or monthly. The wording of summary may be adapted to period of each "issue", personalized to include only changes that user has access to, exclude pages that have specialized read/edit permissions, displays several sections, and sent in dual mime-typed format - plain text and HTML (no images).

Examples of these E-mail formats are set forth in Figure 11, and may include plain text with links (having a link for every "news item" reported, plain text no links (having global links to the QuickPlace, but no links for reported news items), plain text with shortened URLs

(requiring shortened URLs for links into QuickPlaces), and HTML for viewing what a client selects.

In an exemplary embodiment of the invention, a news folder offers a good overview. Such a folder may be saved at a manager's option in a specialized list folder that QuickPlace creates for the purpose. If the folder is later hidden, old issues of news may be retained, or the manager given the option to keep or delete them. The folder only captures news while it is visible and opens to latest issue of News. A user can thus use a folder icon to view the list. A Quick Browse button in action bar of News folder opens same links as shown in current folder state, simply laid out, into separate window for browsing. Such a news folder, similar to email HTML format, is enhanced to include a set of quick-browse search links, and folder instructions.

In accordance with further embodiments of the invention, what's new is access-controlled on the fly, so it matches the E-mail version for each user - i.e., each item in each news "issue" is a page, and each issue is a filter onto a view. The page is a document that provides a link to the original page, wherever it is, with the same ACL. Otherwise, the stored version will be in the form of one

page per issue, each page in the format shown in the prototype.

In a further embodiment of the invention, what's new reports 530 are accompanied by a generic site map 534, a TOC tree without the leaves, access-controlled for the current user.

### **QUICK BROWSE**

In accordance with a preferred embodiment of the invention, a system and method is provided for enhancing browsing in collaboration space of collections of links. These link collections exist in a variety of formats which users need to be able to quickly visit in any order. For example, a random access UI is needed to What's New and Search Results links. These items can reside in more than one room, producing potentially brutal context switches from one link to the next. Also, newcomers or casual users of the collaboration space have trouble knowing how to get started and where they can go in a QuickPlace, and would be greatly assisted by the presence of quick-browse windows, such as (1) live "go there" links from the Tutorial (in a window) to

specific locations, (2) live "go there" links from Help to specific locations, and (3) a generated Sitemap (a simple rendering of the access-controlled TOC hierarchy). Further, it is desired to support random-access browsing of the links in any folder as a set.

Therefore, it is an objective of the invention to provide an improved user interface which is quick to load, takes up minimal screen space (at least while the user browses target pages), and which, while browsing a target page from the Quick-Browse setting, allows users to see and access the page's local setting so that they understand the page's context - e.g., its TOC location, folder, parent (responses), and/or ancestors (revisions).

One approach known to the art is to rely on the browser Back button, like regular websites. This meets all three requirements (assuming no actual reload on browser "Back" in the frameless architecture). However, using the Back button this can be a frustrating experience, and QuickPlace is different from average websites in that much heavier use is expected from authors and managers than would be typical of the average web user. Heavier use requires more efficient ways of getting around.

Referring to Figure 14, in accordance with a preferred embodiment of the invention, quick-browse is implemented as a "remote control" UI mechanism 304. A Remote Control link/icon is displayed in any context 296 that supports it, such as Search Results and What's New. When the user clicks the remote control link 302, such as button 536 (Figure 10), or 532 (Figure 9), a window 296, 330 opens with a compact set of links 304 to browse. When the user clicks a link in the remote control 304, the main QuickPlace window 330 is redirected to the linked page 332. Other contexts such as the Tutorial and Help may themselves act as specialized versions of the remote control by opening into a separate window. For example, the tutorial is implemented as a set of pure HTML files which can be customized/switched by third parties. Some links from the tutorial may use the same mechanism to open links in main window.

Clicking the remote control icon opens a quickbrowse window, containing one or more links. Upon being clicked, these links open in the main QuickPlace window; therefore the QuickBrowse window acts like a remote control onto the main window. This allows the set of hits to remain available as the user browses around, in any order. What's New and Search Results generate links that can be anywhere in a QuickPlace - i.e., in any of possibly many different

rooms. The QuickBrowse window is an attempt to bring some coherence to the experience of jumping around all over the QuickPlace.

Referring to Figure 9, renderings of the contents of the remote control window for What's New 530, Search Results 532, and a site map 534, are illustrated.

#### **COMMUNICATING WITH OTHER MEMBERS: CHAT**

In accordance with a preferred embodiment of the invention, a manager of a QuickPlace may enabled the chat feature, allowing members to "chat" electronically with other QuickPlace members. Referring to Figure 12, in a chat session, two or more members exchange messages by typing them in a chat window 538. As soon as the sender finishes typing a message, it appears on the receiver's screen 540. When the receiver replies to the message, the reply appears below the original message on both screens, so all parties have a temporary transcript of the chat session.

A user may start a chat session, respond to an invitation to join a chat session, reply to a chat message,

and leave a chat session.

### Starting a Chat Session

A member can chat with any other QuickPlace member who currently has the chat window open (or open and minimized).

5 One can chat with one person at a time, two or more people, or everyone who currently has the chat window open.

To start a chat session with one other QuickPlace member, a member clicks "chat" 390 (Figure 12) under "Tools" in the sidebar. Referring to Figure 13, in the "Who is here?" section of the QuickPlace Team Chat window that now appears on the screen, the member double-clicks the name of the person with whom to chat. In the box 538 labeled "Type your text" in the new window that appears on the screen, the member types the text of the message to be sent. Pressing Enter or clicking send sends the message. The message is sent and displayed in the chat transcript area 540. When the member receives a reply to the message, the reply appears in the same area 540. The chat session may be terminated by clicking close or selecting close from a message menu. To remain available for future chat sessions with other QuickPlace members, the QuickPlace Team Chat

document: 000001-000001

window 540 is left open or minimized. To dismiss the QuickPlace Team Chat window, the close box for the window is clicked. To initiate another chat session or receive invitations to join chat sessions, it is necessary to reopen the QuickPlace Team Chat window (by clicking "chat").

To start a chat session with two or more QuickPlace members, a member first invites those other members to participate in the session. To create an invitation for two or more members and then start the chat session, the member clicks "chat" 390 in the "Tools" sidebar. In the "Who is here?" section 542 of the QuickPlace Team Chat window that appears on the screen, the member presses and holds theShift or Ctrl key while clicking the names of the members with to chat. Then, a single-option menu may be selected in which to create an invitation for the chat session entering the subject of the chat in the Topic box, entering the text of invitation in the Message text box, optionally selecting "Secure messages" to prevent anyone outside the QuickPlace from intercepting and reading the messages. The member enters and sends messages and receives replies as above.

To start a chat session with all the QuickPlace members who currently have the QuickPlace Team Chat window open



enter and send the message, and it will be sent to all the members listed under "Who is here?" and displayed in the Transcript area.

When a member of a QuickPlace invites a second member to join a chat session, an invitation dialog box appears on your screen of the second member. Using the buttons in the dialog box, the second member can respond privately, join the chat, or decline the invitation. To respond privately – that is, to reply to the sender of the invitation only – click Respond. To accept the invitation, click Join. To decline the invitation and close the invitation dialog box, click Close.

One of two or several participants in a chat session can leave the chat session at any time by clicking Leave or selecting Leave from the Message menu.

Upon signing in, the user can quickly get an overview of who is currently signed in to the QuickPlace. In accordance with an exemplary embodiment of the invention, this is accomplished by displaying a list of names in a separate floating window 542. A user is enabled to control (a) whether or not the chat features actually load on sign-in, so that on low-bandwidth connections in the sametime

components don't have to be loaded; and (b) her personal availability state - i.e., whether or not other people can see and chat with her. One UI option is to provide a "Do Not Disturb" button (e.g., in the pathbar) - which logs the user out of the same time server, turns off all chat features, and toggles itself to display a button labeled "Who Is Here?". To prevent "lurking", the awareness display may be reciprocal - i.e., if user A can see user B, then user B can see user A. The activation state of the sametime features may be kept persistent across sessions: if the user closes the browser with the chat session turned off, then opens another browser window later, the chat session is reopened in its "off" state. In QuickPlace usage it may be desirable provide awareness of who is in the user's current room, versus the entire QuickPlace. A user is able to leverage the current availability of other members to start a chat or other form of communication with them (e.g., phone call). Chats begin by clicking the user's name or via a menu item in that control. The most important type of chat is N-way private chat by invitation - i.e., the user invites one or more people to join in a private chat which other members cannot see and cannot find out is taking place. Users may be allowed to copy the transcripts of a chat into a QuickPlace page, or to save the chat as a whole as a page. An alternative type of chat is a place chat,

which in QuickPlace by default is the whole QuickPlace, and is made to support persistence - i.e., it may be rendered capable of loading the prior transcript when the user opens the chat window.

5

### **Advantages over the Prior Art**

It is an advantage of the invention that there is provided a collaboration space application model for creating web applications that are aesthetically pleasing and present the user with a simple interface.

10

It is a further advantage of the invention that there is provided a method and system for creating web applications that are instantly created, instantly archived, team and project oriented, easy to use, created, accessed and administered via the Web, reusable, and extensible.

15

It is a further advantage of the invention that there is provided a method and system for conducting synchronous communications between members of collaboration space.

## Alternative Embodiments

It will be appreciated that, although specific  
embodiments of the invention have been described herein for  
purposes of illustration, various modifications may be made  
without departing from the spirit and scope of the  
invention. In particular, it is within the scope of the  
invention to provide a computer program product or program  
element, or a program storage or memory device such as a  
solid or fluid transmission medium, magnetic or optical  
wire, tape or disc, or the like, for storing signals  
readable by a machine, for controlling the operation of a  
computer according to the method of the invention and/or to  
structure its components in accordance with the system of  
the invention.

Further, each step of the method may be executed on any  
general computer, such as an IBM System 390, AS/400, PC or  
the like and pursuant to one or more, or a part of one or  
more, program elements, modules or objects generated from  
any programming language, such as C++, Java, Pl/1, Fortran  
or the like. And still further, each said step, or a file  
or object or the like implementing each said step, may be  
executed by special purpose hardware or a circuit module

\_\_\_\_\_

5

姓名	性别	年龄	籍贯	职业	文化程度	健康状况	婚姻状况	子女情况	其他
王德胜	男	45	山东	工人	小学	良好	已婚	2子1女	
李秀英	女	38	河北	农民	初中	良好	已婚	1子1女	
张国强	男	52	河南	干部	高中	良好	已婚	2子1女	
刘小红	女	25	江苏	教师	大学	良好	未婚	无子女	
陈为民	男	60	浙江	退休	小学	一般	已婚	3子2女	
赵大伟	男	30	广东	学生	高中	良好	未婚	无子女	
孙丽娟	女	42	湖北	护士	中专	良好	已婚	1子1女	
周志远	男	55	四川	工人	小学	一般	已婚	2子1女	
吴小芳	女	28	湖南	教师	大学	良好	未婚	无子女	
郑为民	男	48	安徽	干部	高中	良好	已婚	1子1女	
冯大刚	男	65	山西	退休	小学	一般	已婚	3子2女	
马秀珍	女	35	陕西	农民	初中	良好	已婚	1子1女	
徐国强	男	50	江西	工人	小学	一般	已婚	2子1女	
黄小红	女	22	福建	学生	高中	良好	未婚	无子女	
周为民	男	58	广西	干部	高中	良好	已婚	1子1女	
孙大伟	男	32	云南	工人	小学	一般	已婚	2子1女	
李秀珍	女	40	贵州	教师	大学	良好	已婚	1子1女	
张国强	男	62	海南	退休	小学	一般	已婚	3子2女	
刘小红	女	27	重庆	学生	高中	良好	未婚	无子女	
陈为民	男	53	四川	工人	小学	一般	已婚	2子1女	
赵大伟	男	31	广东	学生	高中	良好	未婚	无子女	
孙丽娟	女	41	湖北	护士	中专	良好	已婚	1子1女	
周志远	男	56	四川	工人	小学	一般	已婚	2子1女	
吴小芳	女	29	湖南	教师	大学	良好	未婚	无子女	
郑为民	男	49	安徽	干部	高中	良好	已婚	1子1女	
冯大刚	男	64	山西	退休	小学	一般	已婚	3子2女	
马秀珍	女	36	陕西	农民	初中	良好	已婚	1子1女	
徐国强	男	51	江西	工人	小学	一般	已婚	2子1女	
黄小红	女	23	福建	学生	高中	良好	未婚	无子女	
周为民	男	59	广西	干部	高中	良好	已婚	1子1女	
孙大伟	男	33	云南	工人	小学	一般	已婚	2子1女	
李秀珍	女	43	贵州	教师	大学	良好	已婚	1子1女	
张国强	男	63	海南	退休	小学	一般	已婚	3子2女	
刘小红	女	28	重庆	学生	高中	良好	未婚	无子女	
陈为民	男	54	四川	工人	小学	一般	已婚	2子1女	
赵大伟	男	32	广东	学生	高中	良好	未婚	无子女	
孙丽娟	女	42	湖北	护士	中专	良好	已婚	1子1女	
周志远	男	57	四川	工人	小学	一般	已婚	2子1女	
吴小芳	女	30	湖南	教师	大学	良好	未婚	无子女	
郑为民	男	50	安徽	干部	高中	良好	已婚	1子1女	
冯大刚	男	65	山西	退休	小学	一般	已婚	3子2女	
马秀珍	女	37	陕西	农民	初中	良好	已婚	1子1女	
徐国强	男	52	江西	工人	小学	一般	已婚	2子1女	
黄小红	女	24	福建	学生	高中	良好	未婚	无子女	
周为民	男	60	广西	干部	高中	良好	已婚	1子1女	
孙大伟	男	34	云南	工人	小学	一般	已婚	2子1女	
李秀珍	女	44	贵州	教师	大学	良好	已婚	1子1女	
张国强	男	64	海南	退休	小学	一般	已婚	3子2女	
刘小红	女	29	重庆	学生	高中	良好	未婚	无子女	
陈为民	男	55	四川	工人	小学	一般	已婚	2子1女	